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ON DYEING.

(Continued from p. 211.)

II. PRINCIPLES OF DYEING.

THE substances commonly employed for clothing may be reduced to four; namely, wool, silk, cotton and linen. The structure, organization and chemical nature of these various substances, have been already considered in the article *on bleaching*.

Permanent alterations in the color of cloth can only be induced in two ways; either by producing a chemical change in the cloth, or by covering its fibres with some substance which possesses the wished for color. Recourse can seldom or never be had to the first method, because it is hardly possible to produce a chemical change in the fibres of cloth without spoiling its texture and rendering it useless. The dyer, therefore, when he wishes to give a new color to cloth, has always recourse to the second method.

The substances employed for this purpose are called *coloring matters*, or *dye-stuffs*. They are for the most part extracted from animal and vegetable substances, and have usually the color which they intend to give to the cloth.

Since the particles of coloring matter with which cloth when dyed, is covered, are transparent, it follows, that all the light re-

flected from dyed cloth, must be reflected, not by the dye-stuff itself, but by the fibres of the cloth below the dye-stuff. The color, therefore, does not depend upon the dye alone, but also upon the previous color of the cloth. If the cloth be *black*, it is clear, that we cannot dye it any other color whatever, because as no light in that case is reflected, none can be transmitted, whatever dye-stuff we employ. If the cloth were red, or blue, or yellow, we could not dye it any color except black; because, as only red, or blue, or yellow rays were reflected, no others could be transmitted. Hence the importance of a fine white color, when cloth is to receive bright dyes. It then reflects all the rays in abundance, and therefore any color may be given, by covering it with the dye-stuff which transmits only some particular rays.

If the coloring matters were merely spread over the surface of the fibres of cloth by the dyer, the colors produced might be very bright, but they could not be permanent, because the coloring matter would be very soon rubbed off; and would totally disappear whenever the cloth was washed, or even barely exposed to the weather. The coloring matter then, however perfect a color it possesses, is of no value, unless it also adheres so firmly to the cloth, that none of the substances usually applied to cloth, in order to clean it, &c. can displace it. Now this can only happen, when there is a strong *affinity* between the coloring matter and the cloth, and when they are actually combined together in consequence of that affinity.

Dyeing then is merely a chemical process, and consists in combining a certain coloring matter with fibres of cloth. This process can in no instance be performed, unless the dye-stuff be first reduced to its integrant particles; for the attraction of aggregation between the particles of dye stuffs is too great to be overcome by the affinity between them and the cloth, unless they could be brought within much smaller distances than is possible while they both remain in a solid form It is necessary, therefore, previously to dissolve the coloring matter in some liquid or other, which has a weaker affinity for it than the cloth has. When the cloth is dipped in this solution, the coloring matter, reduced by this contrivance to a liquid state, is brought

within the attracting distance; the cloth therefore acts upon it, and from its stronger affinity, takes it from the solvent, and fixes it upon itself. By this contrivance too, the equality of the color is in some measure secured, as every part of the cloth has an opportunity of attracting to itself the proper proportion of coloring particles.

The facility with which cloth imbibes a dye depends upon two things; namely, the affinity between the cloth and the dye-stuff, and the affinity between the dye-stuff and its solvent. It is directly as the former, and inversely as the latter. It is of importance to preserve a due proportion between these two affinities, as upon that proportion much of the accuracy of dyeing depends. If the affinity between the coloring matter and the cloth be too great, compared with the affinity between the coloring matter and the solvent, the cloth will take the dye too rapidly, and it will be scarcely possible to prevent its color from being unequal. On the other hand, if the affinity between the coloring matter and the solvent, be too great, compared with that between the coloring matter and the cloth, the cloth will either not take the color at all, or it will take it very slowly and very faintly.

Wool has the strongest affinity for all coloring matters, silk the next strongest, cotton a considerably weaker affinity, and linen the weakest affinity of all. Therefore, in order to dye cotton or linen, the dye-stuff should in many cases be dissolved in a substance for which it has a weaker affinity than for the solvent employed in the dyeing of wool or silk. Thus we may use oxyd of iron dissolved in sulphuric acid, in order to dye wool; but for cotton and linen, it is better to dissolve it in acetous acid.

Were it possible to procure a sufficient number of coloring matters, having a strong affinity for cloth, to answer all the purposes of dyeing, that art would be exceedingly simple and easy. But this is by no means the case; if we except indigo, the dyer is scarcely possessed of a dye-stuff which yields of itself a good color, sufficiently permanent to deserve the name of a dye.

This difficulty, which at first sight appears insurmountable, has been obviated by a very ingenious contrivance. Some sub-

stance is pitched upon, which has a strong affinity, both for the cloth and the coloring matter. This substance is previously combined with the cloth, which is then dipped into the solution containing the dye-stuff. The dye-stuff combines with the intermediate substance, which being finally combined with the cloth, secures the permanence of the dye. Substances employed for this purpose are denominated *mordants*.

III. ON MORDANTS.

The most important part of dyeing is undoubtedly the proper choice, and the proper application of mordants, as upon them the permanency of almost every dye depends. Every thing which has been said respecting the application of coloring matters, applies equally to the application of mordants.—They must be previously dissolved in some liquid, which has a weaker affinity to them than the cloth has, to which they are to be applied; and the cloth must be dipped, or even steeped in this solution, in order to saturate itself with the mordant.

Almost the only substances used as mordants, are earthy salts, metallic oxydes, tan and oil.

Of saline mordants, the most important and most generally used, are the combinations of alumine. They are used, either in the state of common alum, in which the earth is combined with sulphuric acid, or in that of acetite of alumine.

The manner of using *alum*, which is called "alunage," [aluming] varies according to the nature of the stuffs, and to the colors that are desired. Aluming of wool is effected by boiling it for two hours in water, with a fourth of its weight of alum. Silk is left to macerate for some days in the solution of alum sufficiently strong to prevent the crystallization of the salt. Cotton and flax thread are alumed with a strong solution of alum in lukewarm water, to which potash is often added, and in which it remains at least for 24 hours. It has hitherto been thought, that in this operation, alum was decomposed, and that alumine was combined with the stuff, the color of which was more easily fixed, when dipped in the dyeing liquid: but the experiments which have been made by Messrs. Thenard and

Roard have satisfactorily proved, that this opinion is erroneous.*

From a series of well conducted and accurate experiments, they concluded that in the aluming of animal as well as vegetable matter, the alum is entirely combined with them, without undergoing any decomposition, and that it then forms combinations, more or less soluble, which have a great affinity for the coloring matter. They found that the union of the alum with vegetable substances is so weak, that the alumed cottons, for instance, cannot be immersed in boiling water during some minutes, without being deprived of great part of their mordant. So, for cotton stuffs, the greatest care is to be taken to dye them at a low temperature, because it is only when the coloring matter has given a degree of insolubility to that union, that it can, without being altered, support a great heat.

When alum is used as a mordant, a quantity of supertartrite of potash [cream of tartar] is frequently dissolved along with it. In this case, it had been imagined as in the former, that a decomposition of the tartar was taking place, it having been thought, that the potash which this salt contains, did combine with the sulphuric acid of the alum, and that the tartarous acid on the other hand, did combine with part of the alumine and form a tartrite of alumine, which was more easily decomposed by the cloth than the alum. The French chemists above mentioned, have fully shewn the fallacy of this reasoning, by demonstrating, that in aluming wool with alum and tartar, we combine with this substance, undecomposed alum and tartarous acid. These two salts united in the ordinary proportions, which are $\frac{1}{4}$ alum, and $\frac{1}{16}$ of cream of tartar of the weight of the stuff, ought to be used only in cases, where the color is susceptible of being augmented and rendered more lively by the acids as is the case with cochineal, madder and kermes; whereas we ought not to alume, except with alum, the wool intended to be dyed with woad, wood of India, Brazil-wood, &c. of which the colors are easily altered or destroyed by acids.

Acetite of alumine has been but lately introduced into dyeing. This mordant is now prepared by pouring acetite of lead [su-

* See *Annales de Chimie. June*, 1810.

gar of lead] into a solution of alum; a double decomposition takes place, the sulphuric acid combines with the lead, and the compound precipitates, in the form of an insoluble powder, while the alumine combines with the acetous acid, and remains dissolved in the liquid. This mordant is employed for cotton and linen, for which it answers much better than alum. The salt combines completely with the stuff, but this composition retaining only slightly the acetic acid, loses a portion of it by mere exposition to the air, and is transformed into acetic acid of alumine, which is discharged by the water, and into alumine which remains upon the cloth. It is generally acknowledged that by this combination the stuff takes both a richer and a more permanent color.

Concerning the proportions, in which these various mordants are used, it has been ascertained, that equal parts of them, or half the weight of the stuffs, do not act better than $\frac{1}{4}$, but in reckoning from that proportion to $\frac{1}{20}$, that the colors of cochineal, kermes and madder, are weakened according to the diminution of these salts; whereas this effect operates inversely for the woad, the wood of India and of Brazil, so that in those four last substances, the coloring appears so much more deep, as the wool has received less of the mordant. Wools alumed during two, four, or six hours, give to the dye no different colors: thus it is useless to prolong the aluming beyond two hours.

Besides the salts above mentioned, *lime* is sometimes used as a mordant. Cloth has a strong enough affinity for it; but, in general, it does not answer so well, as it does not give so good a color. When used, it is either in the state of lime water, or of sulphate of lime [gypsum] dissolved in water.

Almost all the metallic oxydes have an affinity for cloth, but only two of them are extensively used as mordants, namely, the oxydes of tin, and of iron.

The *oxyde of tin* was first introduced into dyeing by KUSTER, a German chemist, who brought the secret to London in 1543. This period forms an era in the history of dyeing.—The oxyde of tin has enabled the moderns greatly to surpass the ancients in the fineness of their colors; by means of it alone, *scarlet*, the brightest of all colors, is produced.

Tin, as Prourt has proved, is capable of two degrees of oxydation. The first oxyde is composed of 0, 70 parts of tin, and 0, 30 of oxygen; the second or white oxyde, of 0, 60 parts of tin, and 0, 40 of oxygen. The first oxyde absorbs oxygen with great facility, even from the air, and is rapidly converted into white oxyde. This fact makes it certain, that it is the white oxyde of tin alone, which is the real mordant; even if the other oxyde were applied to cloth, as it probably often is, it must soon be converted into white oxyde, by absorbing oxygen from the atmosphere.

Tin is used as a mordant in three states: dissolved in nitro-muriatic acid [aqua regia], in acetous acid, and in a mixture of sulphuric and muriatic acids. Nitro-muriate of tin is the common mordant employed by dyers. They prepare it by dissolving tin in diluted nitric acid, to which a certain proportion of muriate of soda, [common salt] or of ammonia, is added. Part of the nitric acid decomposes these salts, combines with their base, and sets the muriatic acid at liberty They prepared it at first with nitric acid alone, but that mode was very defective, because the nitric acid very readily converts tin to white oxyde, and then is capable of dissolving it. The consequence of which was, the precipitation of the whole of the tin. To remedy this defect, common salt, or salt ammonia, was very soon added; muriatic acid having the property of dissolving white oxyde of tin very readily. A considerable saving of nitric acid might be obtained, by employing as much sulphuric acid as is just sufficient to saturate the base of the common salt, or sal ammonia employed.

When the nitro-muriate of tin is to be used as a mordant, it is dissolved in a large quantity of water, and the cloth is dipped in the solution, and allowed to remain till sufficiently saturated. Tartar is usually dissolved in the water along with the nitro-muriate. The consequence of this is a double decomposition, the nitro-muriatic acid combines with the potash of the tartar, while the tartareous acid dissolves the oxyde of tin. When tartar is used, therefore, in any considerable quantity, the mordant is not a nitro-muriate, but a tartrite of tin.

Iron, like tin, is capable of two degrees of oxydation, but the green oxyde absorbs oxygen so readily from the atmosphere, that it is very soon converted into the red oxyde. It is only this last oxyde which is really used as a mordant in dyeing.—The green oxyde is, indeed, sometimes applied to cloth, but it very soon absorbs oxygen, and is converted into the red oxyde. This oxyde has a very strong affinity for all kinds of cloth. The permanency of the iron spots on linen and cotton is a sufficient proof of this. As a mordant, it is used in two states; in that of sulphate of iron, and acetite of iron. The first is commonly used for wool. The salt is dissolved in water, and the cloth dipped in it. It may be used also for cotton, but in most cases acetite of iron is preferred. It is prepared by dissolving iron or its oxyde, in vinegar, sour beer, &c. and the longer it is kept, the more it is preferred. The reason is, that the mordant succeeds best, when the iron is in the state of red oxyde. It would be better then to oxydate the iron, or to convert it into rust, before using it; which might easily be done, by keeping it for sometime in a moist place, and sprinkling it occasionally with water.

Tan has a very strong affinity for cloth, and for several coloring matters; it is therefore very frequently employed as a mordant. An infusion of *nutgalls*, or of *sumach*, or any other substance containing tan, is made in water, and the cloth is dipped in this infusion, and allowed to remain till it has absorbed a sufficient quantity of tan. Silk is capable of absorbing a very great proportion of tan, and by that means acquires a great increase of weight. Manufacturers sometimes employ this method of increasing the weight of silk.

Tan is often employed also, along with other mordants, in order to produce a compound mordant. *Oil* is also used for the same purpose, in the dyeing of cotton and linen. The mordants with which tan most frequently is combined, are alumine and oxyde of iron.

Besides these mordants, there are several other substances frequently used as auxiliaries, either to facilitate the combination of the mordant with the cloth, or to alter the shade of color; the

chief of these are, *tartar*, *acetite of lead*, *common salt*, *sal ammoniac*, *sulphate or acetite of copper*, &c.

Mordants not only render the dye permanent, but have also considerable influence on the color produced. The same coloring matter produces very different dyes, according as the mordant is changed. Suppose, for instance, that the coloring matter be cochineal; if we use the aluminous mordant, the cloth will acquire a crimson color; but the oxyde of iron produces with it a black.

In dyeing then, it is not only necessary to procure a mordant which has a sufficiently strong affinity for the coloring matter and the cloth, and a coloring matter which possesses the wished for color in perfection, but we must procure a mordant and a coloring matter of such a nature, that when *combined together*, they shall possess the wished for color in perfection. It is evident, that a great variety of colors may be produced with a single dye-stuff, provided we can change the mordant sufficiently.

(To be continued.)

ON COAL.

(Concluded from p. 221.)

IV. METHOD OF COKING.

COAL in its natural state cannot be applied with equal advantage to all the purposes of the arts and manufactures which require fuel. For the smelting of iron-ore, for drying malt, burning lime, making earthen ware, and other similar operations, a fuel is required, that will give a strong and steady heat, without evolving any smoke or bituminous vapor. For this purpose, the bituminous coal, such as we have designed under the name of Pittsburgh coal, is exposed to a great heat, and its volatile parts are thus expelled. It is then called *coke*. In preparing this substance for manufacturing purposes, flat surfaces are appropriated. These are firmly beaten and puddled over with clay, so as to pass the necessary cartage without furrowing or loosening the earth. These spaces form squares, more or less

oblong, and are called hearths, upon which the pieces of coal are regularly placed, inclining to each other. Great care is taken to place each piece upon the ground layer on its acutest angle, in order that the least surface possible may come in contact with the ground. By this means, large interstices are preserved for the admission and regular communication of the air necessary to excite and effect complete ignition.

The quantity of cokes charred in one heap or hearth is various, at different and even at the same works. Forty tons of coal is among the smallest fires, and some hearths again will admit of eighty or one hundred tons. The length of the fire is in proportion to the quantity of coals built: the breadths and heights are also subject to no determinate standard; but are from 30 to 50 inches high, and from 9 to 16 feet broad. In building each fire, they reserve a number of vents reaching from top to bottom, into which the burning fuel is introduced. This is immediately covered by small pieces of coal, beat hard into the aperture: these repress the kindling fire from ascending, and oblige it to seek a passage by creeping along the bottom, which is most exposed to air. In this progress the fire of each vent meets, and, when mixed, rises gradually, and bursts forth on all sides at once.

If the coal contains pyritical matter, the combustion is allowed to continue a considerable time after the disappearance of the smoke; the sulphur then becomes disengaged, and part of it is found in flowers upon the surface of the heap. If the coal is free from this hurtful mixture, the fire is covered up in a short time after the smoke disappears, beginning at the foundation, and proceeding gradually to the top.

The length of time necessary to produce good coke, depends upon the nature of the coal to be coked, and the state of the weather. In 50, 60 or 70 hours, the fire is generally completely covered over with the ashes of char formerly made: the cokes, thus entirely secluded from air, soon cool, and in 12 or 14 days may be drawn and wheeled to the furnace.

It is with pit-coal, in a great measure, as with wood, in the process of charring. Coals do not always afford a weight of cokes in proportion to the quantity of carbon in the coal. It de-

pends more upon the capability of the coal to resist the waste occasioned by combustion, supported by external air, than upon the real quantity of carbon inherent in the coal; as may be seen by comparing the loss of weight which coals undergo in the large way, and the results obtained from the same coals, by burning them unexposed to external air in the small way. The great weight which coal loses under these circumstances is chiefly carried off in smoke.

The great quantity of coal-dust, or small coal collected at the coal-pits, would soon become a great incumbrance, were it not that an admirable method has been discovered, not only to prevent the inconvenience, but to turn it, with a little modification, into an article of commerce and advantage, by preparations as simple as they are ingenious, which we highly recommend to the inhabitants of the western country. Coal, in this pulverized state, is not proper for chamber fires, because it falls through the grates, or extinguishes the fire by falling upon the ignited cinders, in such a mass that no air can get between to assist the combustion. This small coal is, therefore, proper in this state only for some purposes, in glass-houses, lime or brick kilns, forges, &c. That property, which belongs to the best coal, of agglutinating and forming a single mass, when in a state of combustion, naturally suggested the idea of endeavoring to consolidate considerable quantities of this coal-dust, or small coal, by means of a great fire. To effect this it is put into a kiln, in a great degree similar to a lime-kiln, which is previously well heated with large pieces of coal. The small-coal then runs together and forms a mass, without losing any large portion of its valuable qualities. When the ignited mass is completely red, large pieces of it are pulled out with iron-rakes and laid separately on the ground, where they are very soon extinguished; these pieces are firm, though porous, and are excellently adapted for smelting iron, and other ores, in high furnaces. Such is the method of coke-making at New-Castle, and other places. That pursued at Carron near Falkirk, is essentially different. The business is conducted there in the open air, and in the most simple manner; a quantity of large coal is placed on the ground, in a round heap of from twelve to fifteen feet in diameter, and about two feet in height; as many as possible

of the large pieces are placed on their ends, to form passages for the air; above them are thrown the smaller pieces and coal-dust, and in the midst of this circular heap, is left a vacancy of a foot wide, where a few faggots are deposited to kindle it. Four or five apertures of this kind are formed round the ring, particularly on the side exposed to the wind; there is, however, seldom occasion to light it with wood, for other masses being generally on fire, the workmen most frequently use a few shovels of coal already burning, which acts more rapidly than wood, and soon kindles the surrounding pile; as the fire spreads, the mass increases in bulk, puffs up, becomes spongy and light, cakes into one body, and at length loses its volatile parts, and emits no more smoke. It then acquires an uniform red color, inclining a little to white, in which state it begins to break into gaps and chinks, and to assume the appearance of the under part of a mushroom; at this moment the heap must be quickly covered with ashes, of which there is always a sufficient provision around the numerous fires, where the coke is prepared.

At the duke of Norfolk's colliery near Sheffield, several ovens are built on the side of a hill, occupying spaces formed within the bank. Each oven is a circular building, 10 feet in diameter within, and the floor laid with common brick, set edgeways. The wall of the oven rises 19 inches perpendicular above the floor, and the whole is then covered with a brick arch which rises 3 feet 5 inches more, forming nearly a cone, whose base is 10 feet, and whose apex is 2 feet, if measured within. This opening of 2 feet at the top, is left for the convenience of supplying the oven with coal, and to serve as a chimney during the process. The whole height of the building from the floor is five feet, and the wall which is 18 inches in thickness, is built with good brick, and closely laid, that no air may get through any part of the work.

The floor is elevated three feet above the ground, for the convenience of placing a carriage under the door-way to receive the coal as it is raked from the oven. When the oven is thus finished, a strong perpendicular wall is thrown round it, of about 20 inches in thickness, and carried up the whole height of the oven, forming a complete square. The four corners between

the circular buildings and these outward walls, are then filled with soil or rubbish, and well rammed to give greater firmness to the work, and the more effectually to exclude atmospheric air.

When these ovens are once heated, the work goes on night and day without interruption, and without any further expense of fuel. It is conducted thus:—Small refuse coal is thrown in at the circular opening at the top, sufficient to fill the oven up to the springing of the arch; it is then levelled with an iron rake and the door-way built up with loose bricks. The heat which the oven acquires in the former operation is always sufficient of itself, to light up the new charge; the combustion of which is accelerated by the atmospheric air that rushes in through the joints of the loose bricks in the door-way. In two or three hours the combustion goes to such a height, that they find it necessary to check the influx of atmospheric air; the door-way is now plastered up with a mixture of wet soil and sand, except the top-row of bricks which is left unplastered all night. Next morning, (when the charge has been in 24 hours) this is completely closed also; but the chimney remains open till the flame is gone, which is generally quite off in 12 hours more; a few loose stones are then laid on the top of the chimney, and closely covered up with a thick bed of sand or earth. All connexion with the atmosphere is cut off and in this situation the whole remains for 12 hours, to complete the operation. The door-way is then opened, and the cokes are raked out into wheelbarrows, to be carted away. The whole takes up 43 hours, and as soon as the cokes are removed, the ovens are again filled with coal for another burning. About 2 tons of coal are put in for each charge. These cokes are ponderous, extremely hard, of a light gray color, and shine with metallic lustre. They are used in those manufactories that require an intense heat.

When coke is required to be more of the nature of charcoal, the process is conducted in a different manner. The small coal is thrown into a large receptacle, similar to a baker's oven, previously brought to a red heat. Here the door is constantly open, and the heat of the oven is sufficient to dissipate all the bitumen of the coals, the disengagement of which is promo-

ted by frequently stirring with a long iron-rake. The coke from these ovens, though made with the same kind of coal, is very different from that produced by the former operation; this being intensely black, very porous, and as light as pumice-stone.

Pit-coal, usually produces more than the same bulk of coke or cinder, when not over-burnt; but the weight is greatly diminished. Dr. Watson had a ton of coal coked in the usual way, and it weighed when cold, 11 cwt.

V. DISTILLATION OF TAR FROM PIT-COAL.

If, during the preparation of coke, a vessel filled with cold water be placed in the midst of one of the massy columns of smoke which issue through the vent-holes, before the fire has penetrated to the surface of the heap, a considerable quantity of tar will condense upon its external surface. This is the basis of Lord Dundonald's patent for collecting coal-tar. In the above mentioned processes for preparing coke, immense quantities of tar and pitch are inattentively wasted. To obviate these losses, Lord Dundonald erected ovens of a peculiar construction, for burning pit-coal into coke, and at the same time, for collecting in separate vessels, the pitch, oil, tar, &c. which would otherwise have been dissipated. His ovens are so contrived, as to admit the external air to pass through the vessels or buildings containing the coal, from which any of the above mentioned substances are to be extracted. After being kindled, the coals are decomposed by a slow, but imperfect combustion, without dissipating the ingredients. The residuum in the oven, forms excellent coke; while the volatile particles are condensed in reservoirs, placed at proper distances. Lord Dundonald's method has been since greatly improved upon, especially by Mr. David Mushet of Glasgow, and by Mr. Frederick Albert Winsor of London. The coking furnace of the former is built of fire-brick or iron-plates, and made to exclude the external air from the coals to be coked, while they are heated to incalescence, by a fire underneath with flues enveloping the coking vessel. The improvements of the second gentleman seem to unite still greater advantages, but they are not sufficiently indicated in the specification of the various patents which he obtain-

ed for his inventions, to allow us to give our readers a clear and minute description.

Lord Dundonald and his successors in the same career, thought, that the tar distilled from coal was far superior to the common vegetable tar, in preserving timber from the effects of weather, and the bottoms of ships from the destructive worm of the West Indies. Some comparative experiments were tried at New-York about 23 years since, by which it appeared, that boards covered with common tar, and sunk in the river for several months, were much eaten by worms, while a plank covered with the coal-tar remained untouched. In consequence of this apparent proof of superiority, the bottoms of several vessels were coated with the tar bought at the rate of 40 dollars per barrel. But the result of these trials has not served to extend or insure its character.

Capt. Truxton informed Dr. Mease of Philadelphia, that he applied it to the bottom of a ship and discovered nothing in it like a safeguard from the worm, and added, that some years after, Capt. Sarley of New-York, commander of the ship America, painted all the timbers, and planks of his vessel with it, as a preservative of the wood, but that on the ship's return from her first voyage, it had caused a manifest decay of the frame.—The strong smell of the coal-tar appears to be another inconvenience attached to its use in this case, which may frequently injure the quality of the cargo. It is, finally, much more brittle than common tar, and consequently much subject to scale off and to leave the ship's bottom altogether exposed to the ravages of the worms.

Coal-tar has been likewise highly recommended by Lord Dundonald as a paint capable of preventing the natural decay or rot of wood. Dr. Perry, to whom we owe an excellent paper on this subject, says, that he tried it largely and successfully, though perhaps not fairly: for the workmen whom he employed in order to make it work more easily added to it oil of turpentine, which certainly diminished its durability by rendering it more miscible with water. He is, however, inclined to believe, that this substance, used by itself will not become sufficiently dry and hard to resist the influence of the weather.

By boiling the coal-tar which comes over in the process above-mentioned, the volatile parts are evaporated and it becomes pitch. If the evaporation is performed in a retort, the matter which comes over is a spirit, which may be used instead of that kind of turpentine known by the name of tar-spirit, in painting and japanning. The residuum left in the retort is pitch; or, if farther boiled, makes asphaltum, or a substance which is equally applicable for the various arts in which it is employed.

VI. GAS-LIGHT.

The volatile aeriform substance which results from the distillation of pit-coal has been already noticed to consist principally of carburetted hydrogen. The light and heat procured by the combustion of this gas, is one of those recent inventions, which promise to be of the most general utility. The inflammability of this gas has long been a fact familiar to chemists, though it is only since late that experiments have been made with a view to determine the best form of an apparatus for producing the gas, at the least expense of fuel for the distillation, and at the same time to separate from it the tar and other foreign principles, which are thrown out from the coals along with it, and would, if suffered to remain with the gas, cause many inconveniences from their intolerably offensive smell, but may, when separated, be applied to useful purposes.

Mr. Murdoch of Birmingham, was probably the first person who put in practice gas-lights, on an extensive scale; he commenced his experiments on this subject in the year 1792, and in 1798 he applied it for the lighting part of the manufactory of Messrs. Boulton, Watt & Co. at Soho, and in 1802, at the time of the peace of Amiens, the illumination of the Soho-works was made by this gas. Since that period, the method has been adopted in many places of England, by different individuals, and under different shapes. It has made its way into the United States, and is applied since last summer [1813] with the best success, in the extensive cotton manufactory of Mr. Almy, near Providence, in the state of Rhode Island, where about thirty rooms are illuminated by gas-light. During the course of last winter

this example has been followed by several other manufactories of the same state.

The carburetted hydrogen gas is produced in the following manner: A quantity of bituminous pit-coal is introduced, and closed up in an iron retort, disposed in a proper furnace, by which it can be heated so as to throw out the volatile portions of the coals; these are conducted by a pipe into a refrigeratory, where the tar and other extraneous matter are deposited; the gas then enters into a gazometer, being in its way passed through water, to wash and take from it any remaining tar, or other impurities which may cause an unpleasant smell. The gazometer is fitted up in the same manner as for other chemical experiments, and which is described and delineated in most elementary works on chemistry. It rises and falls freely in water, to regulate the admission of the gas, which is conveyed by pipes from it to the burners or candles where it is consumed.

These are formed in various ways, either as a tube ending with a simple orifice, at which the gas issues in a stream, and if once lighted will continue to burn with the most steady and regular light imaginable, as long as the gas is supplied. At other times a number of very minute holes are made in the end of a pipe, which form as many *jets de feu*, and have a very brilliant appearance. This may be placed sometimes in the focus of a parabolic reflector. In cases, where the light is required to be thrown to a distance, other burners are constructed upon the same principle as the Argand-lamp, forming a cylinder of flame, and admitting a current of air both to the inside and outside.

An apparatuss of the most simple kind, on a small scale, of which a draught may be seen in Parke's rudiments of chemistry, is formed in the following manner. A cast iron retort is fixed horizontally in the middle of a reverberatory furnace, so that the mouth of the retort, which should be four inches diameter, extends a few inches outside of the furnace. The mouth has a flaunch and a cover ground together, air-tight, and fastened by a screw in the centre, or by one at each side. From the bottom of the retort an iron pipe conducts the volatilized matter through the wall of the furnace to an air-tight vessel situated beneath it, and filled with water. Near its entrance into this

vessel the pipe is furnished with a stop-cock. But before it reaches this point, it is connected with two other pipes. The one nearest to the furnace rises perpendicularly into the chimney, and is designed to carry off the carbonic acid gas and water which rise at the beginning of the process, and which, if mixed with the carburetted hydrogen, would hurt the combustible quality of the gas sought for. The second pipe of communication is inserted somewhat above the stop-cock; it is bent upwards, and assuming an oval form, joins the vessel again at the opposite side, where it is likewise furnished with a stop-cock before it enters the vessel filled with water. From the side of this pipe springs a pipe of communication inserted above the stop-cock, which conducts the inflammable gas into the gas holder, which is constructed upon the common principles. From the latter the gas may be conducted to any part where the light is wanting, by means of pipes, and in the manner above stated

The method of purifying the inflammable gas in the most perfect and cheapest manner has received of late years the most important improvements. Mr. Clegg, Dr. Stancliff, Mr. B. Cooke of Birmingham, and Mr. Winsor of London, are the inventors of so many different apparatusses, which display the greatest genius in mechanical contrivances. But it would be a useless task to endeavor to give our readers any adequate idea of them without the assistance of drawings.

We shall conclude this article with a communication made by Mr. Murdoch in 1808 to the Royal Society of London, on the subject of gas-light, which was complimented with Count Rumford's medal for the same. He gives the results of the process as conducted in the cotton mills of Messrs. Philips and Lee at Manchester, who have a very large apparatus constructed by Mr. M. at the Soho-works. The gas-lights are equal to 2500 mould-candles of six in the pound, each candle consuming 175 grains of tallow per hour. The number of burners are 271 Argands, and 633 cockspurs, so called from having three jets diverging from each other. These require an hourly supply of 1250 cubic feet of gas, to produce which, requires seven cwt. of cannel-coal in the retort, and about one third of that quantity of good common coal to heat the retort. The cannel-coal in the

retort produces nearly 4½ ale gallons of tar. These calculations, *derived from facts*, will be sufficient to fix the attention of the inhabitants of Pittsburgh upon a subject, which bids fair to add essentially to the numerous advantages which the rich coal-mines of their vicinity have already secured to them.

VII. COAL A MANURE.

The first experiments for ascertaining the effect of pounded coals, or their ashes, on the fertility of meadows and corn-fields, were made in Germany by Counsellor *Stumpf*, about the year 1793. On account of the sulphur contained in coals which by exposure to air and dampness, is converted into sulphuric acid, they are for this purpose superior to gypsum, especially on cold calcareous soils. According to his assertions, the coal-dust, or powder, ought to be scattered on the fields late in autumn, about the thickness of the back of an ordinary knife, so that he employed about seven cwt. of coal to manure a German acre of 180 square roods, Rhenish measure. But as there is a great difference between these coals, the residue of which, after burning, consists of *calcareous* earth, or stone, and others, which leave an aluminous slate; he advises the agriculturalist to make use of the former kind for every species of clover and grasses, as well as for wheat, rye, barley, oats or similar grains; and to avail himself of the latter in the culture of spelt, buckwheat, as likewise of clover, and the different species of grain, but particularly of all the leguminous fruit, such as peas, beans, &c.

[For the Western Gleaner.]

ON THE UNITY OF DISEASE.

BY BENJAMIN BURRELL, M.D.

THE unity and simplicity of Nature in all her operations, is obvious to every judicious observer. The nearer we approach to truth in exploring the phenomena of the universe, the greater identity and uniformity we discover, and the more complex our notions, the more the mind becomes enveloped in error.—The frugality of nature is conspicuous in all her operations; where one agent is sufficient to effect her purposes, she never uses more. The motions of the heavenly bodies, the change of seasons, the succession of day and night, the tides, winds, and the different phenomena of motion, were most absurdly explained, till one high power was discovered to be the sole governing principle of them all.

The Science of Chemistry affords many proofs of this law of unity and simplicity existing throughout the works of nature. A few elementary substances are found to be the basis of all the various forms of matter which compose the universe. All life, animal and vegetable, however variously modified, is the effect of one agent, viz. *Stimulus*. Health and diseases are effects of the same agent, differing in degree. The simplicity of nature's operations often prevents their being seen. Men, in their investigations, extend their views beyond the simplicity of truth, and consequently become lost in error. The circulation of the blood was long a mystery; but its simplicity appears to have been the only cause of its obscurity; and the physiology of the nervous system, the *Arcanum* of the present, probably lies concealed under the same simplicity.

Some have become infidels in religion, from no other cause, than that truth was too simple to be believed. The same cause makes men infidels in the science of medicine, by leading them beyond the simplicity of nature for the cause of the disease.

1st. Disease is simply *Morbid excitement*, or *wrong action*; or, in other words, it consists in a morbid state of the system, in

which *some* of its functions are carried on in an uneasy and irregular manner.

This morbid excitement, whether it exist in the form of *Convulsive action*, suffocated action, spasm, itching, or heat, is the same thing, and all these are effects of different degrees of force in the remote, or exciting causes, or of the difference of organization in the affected parts: they all, moreover, occur at different times, under different circumstances of treatment, in the same form of disease, as in *gout* and *yellow fever*.

The same cause that produces hepatitis in one, may in another at different times produce all the variety of forms in Cullen's Nosology. Thus, *cold* produces rheumatism, pleurisy, gout, apoplexy, palsy, hemoptisis, quinsy, pneumony, ophthalmia, hemiplegia, catarrh, stricture in the urethra, and eynanche trachealis, all cured by depletion. Again, *cold* may produce common inflammations, these inflammations terminate in suppurative inflammation, and produce schirrhus and lastly cancer: Cold may not be the direct cause of cancer, but it is frequently the indirect cause of its production. It is impossible to divide disease, for disease is disease, whether in the toes, skin, glands or muscles, and decompose it as you will, the residuum will still be *diseased action*. A mariner might with the same propriety employ a new compass for every different sea, but happily a compass is a compass, whether in the Pacific, Baltic, or Atlantic, and will conduct you as well by the same rules over all the seas in the known world, as to the nearest port.

It is, moreover, impossible to make a division in the causes of diseases, for they are so inseparably blended like diseases, as not to admit of division.

At one time the single effect of the remote cause, is fully adequate to produce disease; at another, their whole combined forces are scarcely sufficient. Thus, the sudden and powerful action of *miasmata* in some cases have produced instantaneous death, while under different circumstances, scarcely one visible feature of disease have been produced, apparently subject to the influence of all the united causes.

They run together as much, (I mean the causes) as do the streams of different rivulets to form one general mass, which,

in its turn, may have the effect of overflowing its banks, and losing its force by an infinite number of meandering streams, instead of passing through its natural and accustomed channel, when it probably would have carried devastation and death through every part of its course.

It is impossible to divide diseases, or give them names which can delineate with any accuracy their different natures, from the different forms of morbid action.

Cullen's Pyrexia would lead us to believe, from the definition of the word, that this class of diseases* is always attended with a preternatural degree of heat, which is not the case, as all the different orders of this class frequently appear with a temperature of the body, that is natural, or preternaturally cool.

In the treatment of the *Febris Puerperalis*, by many physicians, we discover but a small part of the murdering effects of Nosology.—Here they invariably associate the idea of powerful stimulants with the cure of the disease. Ask them for once, what is the state of the pulse? they say, "No matter what the pulse is, the disease is puerperal fever, and always requires hot and stimulating drinks—" Delenda est Nosologia!

In the month of May 1813, I was called to attend the wife of F. S. who had been delivered the preceding day of a fine boy. I found her pulse small, quick and tense, with frequent flushes of heat during the day. Her abdomen was considerably swollen, and hard. Her tongue inclining to yellow. She complained of a dull, deep seated pain in the lower part of the abdomen, and informed me, that the midwife had exerted considerable force in extracting the placenta, which appeared very diminutive: she had a pretty correct idea of the cause and heat of the pain, which was from the inflammation induced by lacerating the tender parts in the process of extracting the placenta.—In short, I found her in the *synochoid state of fever*, progressing rapidly to the synocha, or common inflammatory state of fever. I immediately put in force the antiphlogistic means—recommended cool acidulate drinks, weak diet, &c. &c. I found great benefit from the use of *Centrifugal* medicines, and indeed from all the means I employed, they had the tendency of considerably dimin-

* I use the plural number, in conformity to custom.

ishing the inflammatory action. Inflammation was evident not only from the dissolved state of the blood first drawn, but from the buffy presentations of the subsequent and last bleedings which I performed. On the 8th day, in consequence of my little success, from the extreme tenacity and indolence of the disease, I was supplanted by an *Empiric in medicine*, who, in order to insure his attendance, objected to the original plan of treatment. Powerful stimulants were immediately given—a composition of wine, spice, &c. &c.—the disease consequently increased. The abdomen became still more and more tense and tumefied, and in 35 hours, mortification and death were the consequence: Let the candid and scientific physician judge! Next day I was informed that the cool drinks which I had recommended were the cause of death in this case. This too was the opinion of my *enlightened* rival.—Thus it is that the destructive effects of Nosology and Empiricism go hand in hand, and extend through every part of our union.

In like manner, many physicians of the present day would decide upon it as criminal to bleed during pregnancy; but I hope, from my definition of disease, and the various phenomena of pregnancy, to prove, that it is as much a disease as pleurisy, rheumatism, or inflammation of the brain, and that blood-letting is not only admissible, but absolutely necessary in many cases:

Do we observe a quick and tense pulse in pregnancy? so do we in rheumatism, pleurisy, and inflammation of the brain.

Does the blood when drawn in pregnancy exhibit a sizy buffy surface? so does it in the three above mentioned diseases.

Is the *membrana decidua*, which is never found in the unimpregnated state, decidedly a production of pregnancy?

We find the same membrane, upon dissection, (different only in name) attached to the linings of the pleura, after violent inflammation of the breast. The same is also found after acute diseases of the liver attached to that viscus. We also discover upon dissection after death of maniacs and others, a thickness of the linings of the brain, which, if neatly examined, would

prove itself very similar to other productions found in different parts of the system, the consequence of inflammation.

Do we cure pleurisy, rheumatism, and phrenites by bloodletting? we in like manner relieve the system from obstructions, &c. in pregnancy, by bleeding, and not only frequently prevent abortion by it, but considerably palliate and prevent very distressing pain,—and here Dr. Cullen remarks, "that diseases which are cured altogether by the same remedies, are of the same nature."

APHORISMS OF POLITICAL ECONOMY.

(*Continued from p* 232.)

SECTION II.

CHAP I.

ON THE FUNDAMENTAL PRINCIPLE OF THE POLITICAL ECONOMY OF MODERN AGRICULTURAL NATIONS.

¶ 72. Every political society existing under a system of relative agriculture established on manufactures and commerce is necessarily divided into three constituent classes of people, viz. the class of the *husbandmen*, the class of the *manufacturers*, and the class of the *magistrates* or *public officers* of the state. The first of these classes is destined to supply the manufacturers and the magistrates with the necessary subsistence; the second to furnish articles manufactured for useful purposes to both the manufacturers and magistrates, and the third finally to maintain the security, the order and the prosperity of the whole society.

¶ 73. These mutual exchanges between the three constituent classes of a commonwealth are by their nature essentially founded upon one great principle, which is that of *perfect equality*. Without this equality, some would have devoted to others their labor gratuitously either partly or in totality. They would have thus borne the fetters of a kind of slavery, which would not have failed to produce upon the national industry the same disastrous effects, which this miserable condition of man has always produced in every age and in every country.

¶ 74. The real and intrinsecal value of any thing produced or formed by labor, is measured by *the quantity and the quality of labor* which its production or its formation have necessarily required, because this is precisely the amount which the acquisition of any thing produced or formed by labor has cost him who has given it shape or existence. Thus, in order that equality may take place in the exchanges operated between the three constituent parts of any society, it is necessary, that they should be established upon the quantity and quality of labor, and in every case a less quantity is to be compensated in quality, and a less quality is to be compensated in quantity.

¶ 75. This principle is applicable, not only to the mutual exchanges of subsistence and of manufactured articles, which take place between the two first classes of society, but likewise to the relation which exists between the class of the magistrates on one hand and those of the husbandmen and the manufacturers on the other; because these two latter classes were naturally never to contribute to the wants of the former beyond the degree in which they would cause their prosperity.

¶ 76. To maintain the mutual exchanges between all classes of society in the greatest possible state of equality, ought to be the most essential endeavor of governments in the management of the political economy of the states entrusted to their care. This equality alone can be productive of an annual increase of those exchanges, as by it alone the precious advantage of obtaining a full equivalent for the labor employed, is secured to man. And on this annual multiplication of exchanges depend finally, all the advances that a people are capable of making in their agriculture, their manufactures and their prosperity.

CHAPTER II.

ON THE DIFFERENT MEANS MADE USE OF TO PERFORM EXCHANGES.

¶ 77. EXPERIENCE points out to us three different methods more or less perfect, by which agricultural nations are capable of performing mutual exchanges. The first consists in perform-

ing these exchanges in nature; by the second they are performed with the assistance of any equivalent whatever, and by a third and final improvement, they have chosen the precious metals under the form of coins, as the universal equivalent of all their exchanges.

¶ 78. The *exchanges in nature*, that is to say, the direct exchanges of provisions or of manufactured articles for other provisions or other manufactured articles, are inseparable from the greatest inconveniences, and consequently liable to oppose powerful obstacles to the free development of national prosperity. Not only it is extremely difficult to adjust things in such a manner, that every one may be enabled to offer to another in exchange of what he desires from him, an object that may be equally agreeable to the latter, but in many circumstances it must be impossible to equalise these exchanges, as many articles cannot be easily divided without undergoing an essential degradation.

¶ 79. The manifold inconveniences attached to exchanges in nature, have suggested the idea of making choice of any particular thing, to which has been attributed the property of filling in every exchange, the office of an *equivalent* to one of the things to be exchanged; and as care was taken to choose this universal equivalent among things susceptible to be divided and subdivided without deterioration, it is evident, that this expedient was infinitely more favorable to the multiplication of exchanges. The materials selected for this purpose varied considerably, according to the manners of the people, the productions of their soil and the nature of their peculiar wants.

¶ 80. The materials first pitched upon as universal equivalents in all the exchanges of a nation, were but little capable of answering this purpose, as perfectly as the most essential condition of every exchange, viz. equality, would have required it. For it is evident, that it is not sufficient that a thing be susceptible to be divided and subdivided without deterioration, but that, moreover, it be capable of being preserved for any length of time, without losing any thing of its value, as without this condition a real equality of exchanges was impossible.

¶ 81. Finally, it was perceived that metals, and especially the *precious metals*, were possessed of all the qualities necessary to form perfect equivalents in every exchange. Not only these metals keep the most exact proportion of value in all their divisions and subdivisions, but they may be likewise preserved for any length of time without losing their valuable properties.

¶ 82. The precious metals, indeed, are not extracted from the bowels of the earth, equal in intrinsecal value, or as it is commonly expressed, of an equal standard. But all enlightened agricultural nations have taken measures, not only to fix the real and intrinsecal value of their current coin, but also to determine the exact weight of the various divisions and subdivisions, under which they have thought proper to introduce these metals into their exchanges, and their respective governments have taken care to prevent fraud, by affixing to them stamps certifying their weight and their standard. From this moment the precious metals devoted to this purpose have taken the name of *money*.

¶ 83. The exchange made between any merchandise and gold or silver, under the form of money, is an exchange as perfect, as that which takes place between any other two kinds of merchandise; but in common life it bears the name of *sale*. He who gives the money is called *buyer* or *purchaser*, and he who gives in return any merchandise is called *seller* or *vender*.—The value of this merchandise expressed in money, is called *price*.

¶ 84. This manner of performing exchanges, though infinitely more perfect than the former ones, yet left some essential inconveniences attached to it, viz. 1, the hazardous transportation of merchandises from one place to another, in the *uncertain* hope of selling. 2, The continual displacing of people from their farms and customary occupations, either with a view to find out the merchandises which they wanted, or with that to find purchasers for the articles which they wished to sell.

¶ 85. The agricultural nations were not long before they devised an expedient proper to afford a remedy to these inconveniences, by establishing through the whole extent of their territories, and at proper distances, *fairs*, or in other words, by

assigning to the husbandmen and to the manufacturers particular places, where they might transport at stated times their respective commodities in order to sell them.

¶ 86. These fairs, nevertheless, did not yet completely and entirely obviate the difficulties connected with this mode of supplying the wants of society. Men and merchandises were still frequently displaced without any certain prospect of obtaining the desired advantages, and frequent disappointments were unavoidable. Finally arose in every agricultural nation, a particular class of men, who, under the name of *merchants*, took upon themselves to perform alone all the purchases and sales of the various classes of the society, under the condition of reserving to themselves a full compensation for their labor in all the exchanges effected by their mediation.

¶ 87. The exchanges thus performed by the intervention of merchants, have taken, finally, the name of *commerce*, and the astonishing facility which this institution has given to the multiplication of exchanges, has rendered the agricultural nations capable of making the most unshackled and the most rapid advances in their agriculture and in their manufactures, and consequently in their prosperity.

(To be continued.)

LIFE OF CAPTAIN LEWIS.

[The *History of the Expedition under the command of Captains Lewis and Clark to the sources of the Missouri and to the Pacific Ocean, prepared for the press by Paul Allen, esq.* has just reached this place. Until we are prepared to present our readers with an account of this interesting national work, we offer them the following sketch of the life of captain Lewis, from the pen of Mr. Jefferson, which is prefixed to this publication.]

"TO THE EDITOR OF THE HISTORY OF THE EXPEDITION, &c.

"*Monticello, August* 18, 1813.

"SIR,

"IN compliance with the request conveyed in your letter of May 25, I have endeavored to obtain, from the relations and friends of the late governor Lewis, information of such incidents of his life, as might be not unacceptable to those who may read the narrative of his western discoveries. The ordinary occurrences of private life, and those also while acting in a subordinate sphere in the army, in a time of peace, are not deemed sufficiently interesting to occupy the public attention; but a general account of his parentage, with such smaller incidents as marked his early character are briefly noted; and to these are added, as being peculiarly within my own knowledge, whatever related to the public mission, of which an account is now to be published. The result of my inquiries and recollections shall now be offered, to be enlarged or abridged as you may think best; or otherwise to be used with the materials you may have collected from other sources.

"Meriwether Lewis, late governor of Louisiana, was born on the eighteenth of August, 1774, near the town of Charlottesville, in the county of Albemarle, in Virginia, of one of the distinguished families of that state. John Lewis, one of his father's uncles, was a member of the king's council, before the revolution. Another of them, Fielding Lewis, married a sister

of general Washington. His father, William Lewis, was the youngest of five sons of colonel Robert Lewis, of Albemarle, the fourth of whom, Charles, was one of the early patriots who stepped forward in the commencement of the revolution, and commanded one of the regiments first raised in Virginia, and placed on continental establishment. Happily situated at home, with a wife and young family, and a fortune placing him at ease, he left all to aid in the liberation of his country from foreign usurpations, then first unmasking their ultimate end and aim. His good sense, integrity, bravery, enterprise, and remarkable bodily powers, marked him as an officer of great promise; but he unfortunately died early in the revolution. Nicholas Lewis, the second of his father's brothers, commanded a regiment of militia in the successful expedition of 1776, against the Cherokee Indians; who, seduced by the agents of the British government to take up the hatchet against us, had committed great havoc on our southern frontier, by murdering and scalping helpless women and children, according to their cruel and cowardly principles of warfare. The chastisement they then received closed the history of their wars, and prepared them for receiving the elements of civilization, which, zealously inculcated by the present government of the United States, have rendered them an industrious, peaceable, and happy people. This member of the family of Lewises, whose bravery was so usefully proved on this occasion, was endeared to all who knew him by his inflexible probity, courteous disposition, benevolent heart, and engaging modesty and manners. He was the umpire of all the private differences of his county—selected always by both parties. He was also the guardian of Meriwether Lewis, of whom we are now to speak, and who had lost his father at an early age. He continued some years under the fostering care of a tender mother, of the respectable family of Meriwethers, of the same county: and was remarkable even in infancy for enterprise, boldness, and discretion. When only eight years of age he habitually went out in the dead of the night, alone with his dogs, into the forest to hunt the raccoon and opossum, which, seeking their food in the night, can then only be taken. In this exercise, no season or circumstance

could obstruct his purpose—plunging through the winter's snows and frozen streams in pursuit of his object. At thirteen he was put to the Latin school, and continued at that until eighteen, when he returned to his mother, and entered on the cares of his farm; having, as well as a younger brother, been left by his father with a competency for all the correct and comfortable purposes of temperate life. His talent for observation, which had led him to an accurate knowledge of the plants and animals of his own country, would have distinguished him as a farmer; but at the age of twenty, yielding to the ardor of youth, and a passion for more dazzling pursuits, he engaged as a volunteer in the body of militia which were called out by general Washington, on occasion of the discontents produced by the excise taxes in the western parts of the United States; and from that situation he was removed to the regular service as a lieutenant in the line. At twenty-three he was promoted to a captaincy; and, always attracting the first attention where punctuality and fidelity were requisite, he was appointed paymaster to his regiment. About this time a circumstance occurred, which, leading to the transaction which is the subject of this book, will justify a recurrence to its original idea. While I resided in Paris, John Ledyard, of Connecticut, arrived there, well known in the United States for energy of body and mind. He had accompanied captain Cook on his voyage to the Pacific ocean; and distinguished himself on that voyage by his intrepidity. Being of a roaming disposition, he was now panting for some new enterprise. His immediate object at Paris was to engage a mercantile company in the fur-trade of the western coast of America, in which, however, he failed. I then proposed to him to go by land to Kamtschatka, cross in some of the Russian vessels to Nootka Sound, fall down into the latitude of the Missouri, and penetrate to, and through that, to the United States. He eagerly seized the idea, and only asked to be assured of the permission of the Russian government. I interested, in obtaining that, M. de Simoulin, Minister plenipotentiary of the empress at Paris, but more especially the baron de Grimm, minister plenipotentiary of Saxe-Gotha, her more special agent and correspondent there in matters not immediately diplomatic.

Her permission was obtained, and an assurance of protection while the course of the voyage should be through her territories. Ledyard set out from Paris and arrived at St. Petersburgh after the empress had left that place to pass the winter, I think, at Moscow. His finances not permitting him to make unnecessary stay at St. Petersburgh, he left it with a passport from one of the ministers; and at two hundred miles from Kamtschatka, was obliged to take up his winter quarters. He was preparing in the spring to resume his journey, when he was arrested by an officer of the empress, who by this time had changed her mind, and forbidden his proceeding. He was put into a close carriage, and conveyed day and night, without ever stopping, till they reached Poland; where he was set down and left to himself. The fatigue of this journey broke down his constitution; and when he returned to Paris his bodily strength was much impaired. His mind, however, remained firm, and he after this undertook the journey to Egypt. I received a letter from him full of sanguine hopes, dated at Cairo, the fifteenth of November, 1788, the day before he was to set out for the head of the Nile; on which day, however, he ended his career and life: and thus failed the first attempt to explore the western part of our northern continent.

"In 1792, I proposed to the American Philosophical Society that we should set on foot a subscription to engage some competent person to explore that region in the opposite direction; that is, by ascending the Missouri, crossing the Stony mountains, and descending the nearest river to the Pacific. Captain Lewis being then stationed at Charlottesville, on the recruiting service, warmly solicited me to obtain for him the execution of that object. I told him it was proposed that the person engaged should be attended by a single companion only, to avoid exciting alarm among the Indians. This did not deter him; but Mr. Andrew Michaux, a professed botanist, author of the Flora Borealis Americana, and of the Histoire des Chesnes d'Amerique, offering his services, they were accepted.* He

* The name of Michaux, although that of a foreigner, ought to be revered by every American. The Botany of this country has by no one been investigated with more zeal and better success than by him

received his instructions, and when he had reached Kentucky in the prosecution of his journey, he was overtaken by an order from the minister of France, then at Philadelphia, to relinquish the expedition, and to pursue elsewhere the botanical inquiries on which he was employed by that government: and thus failed the second attempt for exploring that region.

"In 1803, the act for establishing trading houses with the Indian tribes being about to expire, some modifications of it were recommended to congress by a confidential message of January 18th, and an extension of its views to the Indians on the Missouri. In order to prepare the way, the message proposed the sending an exploring party to trace the Missouri to its source, to cross the Highlands, and follow the best water communication which offered itself from thence to the Pacific ocean. Congress approved the proposition, and voted a sum of money for carrying it into execution. Captain Lewis, who had then been near two years with me as private secretary, immedi-

and by his son. His *history of American Oaks*, which was published in Paris 1801, ought to be in the library of every gentleman. His *Flora Americana Borealis*, is still, in spite of the superciliousness with which we have heard it treated by *malignant jealousy*, the most complete catalogue of our native plants. This indefatigable promoter of science fell a victim to the epidemic of the island of Madagascar, where he had repaired in the course of the expedition of Captain Baudin, in order to investigate the botany of that country. To his son we owe the publication of a *voyage down the Ohio and the Mississippi, made in* 1796, which was honored with two translations, the one in England and the other in America, and which, notwithstanding the great changes, which since that period have taken place in this country, will be still read with interest. In 1808 we have seen him engaged in writing a *History of the Forest-trees of North America*, in reference, chiefly to their uses in the arts, and their introduction in commerce. From the specimens of this work which we have been permitted to peruse in the manuscript of the author, we cannot but form the highest opinion of its utility. It is highly probable, that at the present moment, the publication of the French original is terminated in Paris, and we look anxiously for an English translation of it, which, if we are not mistaken, was promised some years ago, by Messrs. Bradford and Inskeep of Philadelphia.——*Editor.*

ately renewed his solicitations to have the direction of the party. I had now had opportunities of knowing him intimately. Of courage undaunted, possessing a firmness and perseverance of purpose which nothing but impossibilities could divert from its direction; careful as a father of those committed to his charge, yet steady in the maintenance of order and discipline; intimate with the Indian character, customs, and principles; habituated to the hunting life; guarded, by exact observation of the vegetables and animals of his own country, against losing time in the description of objects already possessed; honest, disinterested, liberal, of sound understanding, and a fidelity to truth so scrupulous, that whatever he should report would be as certain as if seen by ourselves; with all these qualifications, as if selected and implanted by nature in one body for this express purpose, I could have no hesitation in confiding the enterprise to him. To fill up the measure desired, he wanted nothing but a greater familiarity with the technical language of the natural sciences, and readiness in the astronomical observations necessary for the geography of his route. To acquire these he repaired immediately to Philadelphia, and placed himself under the tutorage of the distinguished professors of that place, who, with a zeal and an emulation, enkindled by an ardent devotion to science, communicated to him freely, the information requisite for the purposes of the journey. While attending too, at Lancaster, the fabrication of the arms with which he chose that his men should be provided, he had the benefit of daily communication with Mr. Andrew Ellicot, whose experience in astronomical observation, and practice of it in the woods, enabled him to apprise captain Lewis of the wants and difficulties he would encounter, and of the substitutes and resources offered by a woodland and uninhabited country.

"Deeming it necessary he should have some person with him of known competence to the direction of the enterprise, in the event of accident to himself, he proposed William Clarke, brother of general George Rogers Clarke, who was approved, and, with that view, received a commission of captain.

"In April, 1803, a draught of his instructions was sent to captain Lewis, and on the twentieth of June they were definitively signed.*

"While these things were going on here, the country of Louisiana, lately ceded by Spain to France, had been the subject of negociation at Paris between us and this last power; and had actually been transferred to us by treaties executed at Paris on the thirtieth of April. This information, received about the first day of July, increased infinitely the interest we felt in the expedition, and lessened the apprehensions of interruption from other powers. Every thing in this quarter being now prepared, captain Lewis left Washington on the fifth of July, 1803, and proceeded to Pittsburgh, where other articles had been ordered to be provided for him. The men too were to be selected from the military stations on the Ohio. Delays of preparation, difficulties of navigation down the Ohio, and other untoward obstructions, retarded his arrival at Cahokia until the season was so far advanced as to render it prudent to suspend his entering the Missouri before the ice should break up in the succeeding spring.

"From this time his journal, now published, will give the history of his journey to and from the Pacific ocean, until his return to St. Louis on the twenty-third of September, 1806. Never did a similar event excite more joy through the United States. The humblest of its citizens had taken a lively interest in the issue of this journey, and looked forward with impatience for the information it would furnish. Their anxieties too for the safety of the corps had been kept in a state of excitement by lugubrious rumors, circulated from time to time on uncertain authorities, and uncontradicted by letters, or other direct information, from the time they had left the Mandan towns, on their ascent up the river in April of the preceding year, 1805, until their actual return to St. Louis.

* We have suppressed the instructions imparted to Captains Lewis and Clark, which is given in full length in the original, as being beyond the compass of our pages.——*Editor.*

"It was the middle of February, 1807, before captain Lewis, with his companion captain Clarke, reached the city of Washington, where congress was then in session. That body granted to the two chiefs and their followers the donation of lands which they had been encouraged to expect in reward of their toil and dangers. Captain Lewis was soon after appointed governor of Louisiana, and captain Clarke a general of its militia, and agent of the United States for Indian affairs in that department.

"A considerable time intervened before the governor's arrival at St. Louis. He found the territory distracted by feuds and contentions among the officers of the government, and the people themselves divided by these into factions and parties. He determined at once to take no side with either; but to use every endeavor to conciliate and harmonize them. The even-handed justice he administered to all soon established a respect for his person and authority; and perseverance and time wore down animosities, and re-united the citizens again into one family.

"Governor Lewis had, from early life, been subject to hypochondriac affections. It was a constitutional disposition in all the nearer branches of the family of his name, and was more immediately inherited by him from his father. They had not, however, been so strong as to give uneasiness to his family. While he lived with me in Washington I observed at times sensible depressions of mind: but knowing their constitutional source, I estimated their course by what I had seen in the family. During his western expedition, the constant exertion which that required of all the faculties of body and mind, suspended these distressing affections; but after his establishment at St. Louis in sedentary occupations, they returned upon him with redoubled vigor, and began seriously to alarm his friends. He was in a paroxysm of these, when his affairs rendered it necessary for him to go to Washington. He proceeded to the Chickasaw Bluffs, where he arrived on the sixteenth of September, 1809, with a view of continuing his journey thence by water. Mr. Neely, agent of the United States with the Chickasaw Indians, arriving there two days after, found him extremely indisposed, and betraying at times some symptoms of a derangement

of mind. The rumors of a war with England, and apprehensions that he might lose the papers he was bringing on, among which were the vouchers, of his public accounts, and the journals and papers of his western expedition, induced him here to change his mind, and to take his course by land through the Chickasaw country. Although he appeared somewhat relieved, Mr. Neely kindly determined to accompany and watch over him. Unfortunately, at their encampment, after having passed the Tennessee one day's journey, they lost two horses, which obliged Mr. Neely to halt for their recovery, the governor proceeded, under a promise to wait for him at the house of the first white inhabitant on his road. He stopped at the house of a Mr. Grinder, who not being at home, his wife, alarmed at the symptoms of derangement she discovered, gave him up the house and retired to rest herself in an out-house, the governor's and Neely's servants lodging in another. About three o'clock in the night he did the deed which plunged his friends into affliction, and deprived his country of one of her most valued citizens, whose valor and intelligence would have been now employed in avenging the wrongs of his country, and in emulating by land the splendid deeds which have honored her arms on the ocean. It lost too to the nation the benefit of receiving from his own hand the narrative now offered them of his sufferings and successes, in endeavoring to extend for them the boundaries of science, and to present to their knowledge that vast and fertile country, which their sons are destined to fill with arts, with science, with freedom and happiness.

"To this melancholy close of the life of one, whom posterity will declare not to have lived in vain, I have only to add, that all the facts I have stated are either known to myself, or communicated by his family or others, for whose truth I have no hesitation to make myself responsible; and I conclude with tendering you the assurances of my respect and consideration."

TH. JEFFERSON.

Mr. PAUL ALLEN, Philadelphia.

ON STYLE.

BY F. P. F. DE LEUZE.

[The following extract from *Eudoxe ou entretiens sur l'etude des sciences, des lettres et de la philosophie* [Eudoxus, or conversations on the study of sciences, of letters and of philosophy] Paris, 1810. 8vo. 2 vols. will not only give our readers a very favorable idea of a writer equally profound and amiable, but may possibly be of some practical utility to those who mean to acquire the difficult *art of writing*, whose principles are not yet *generally* understood in this country.]

EUDOXUS.

I remark, Aristus, that among the studies in which you have advised me to engage successively, you have not yet made any mention of writing. Should not this art, which is so difficult, require a particular study? The treatises of Cicero and Quintilianus among the ancients; those of Blair, of Condillac, and hundreds of others among the moderns, prove, that the art of writing has always been considered as governed by certain rules. Would it not be convenient to you to give me some instructions on this subject?

ARISTUS.

The works of rhetoricians are proper to form the taste; they teach how to judge well, but they cannot teach how to execute well. The first thing in this respect is to be perfectly well acquainted with our language; it is then that we write well, if we are full with our subject, if we possess many ideas, a sound logic, a lively imagination and an ear open to harmony. He, who is destitute of these qualities, cannot, even with the knowledge of every rule, compose any thing else but college-exercises. In every kind of writing, the ideas ought to proceed from the subject and be connected among themselves: the expression which conveys any idea with energy, clearness and precision, is always good; the best is that which presents an image, provided, this image does not attract the attention to itself, but upon the subject which it is intended to represent.

The difference between a well written book and another that is badly written, is, that the one attaches us, when the other proves tiresome. When several persons are relating the same fact, he who will have engraved upon your mind all the minor circumstances, will have made the best relation. Of two men who wish to prove any truth to enlightened judges, the most able is certainly he, who has produced the deepest impression.

EUDOXUS.

This is undoubtedly true; but how shall we do, in order to please, to interest, to make impression? There are, if I am not mistaken, different kinds of style, each of which must be employed by preference according to the nature of the work.

ARISTUS.

The distinction established by rhetoricians between the sublime style, the temperate style, and the simple style, is not exact, as these characters approach one another through a gradation of shades. The distinction of style into the oratorical, the historical, the didactic, the epistolary, &c. is nothing more but the consequence of a general principle, which is, that the style ought always to be analagous to the importance of the subject, to the manner in which he who speaks, is affected, and to the dispositions of those who listen to him. A letter may be written in a sublime style, and an oratorical discourse in a simple style, according to circumstances The fitness of the style to the subject is a principle, which ought never to be neglected; but taste alone can make a proper application of it. There are as many different kinds of style, as there are different subjects and different manners of considering them. It is necessary to read every day some pieces of the first writers, in order to preserve the sentiment of the beautiful, to be familiarised with the elegance and harmony of expression, but not in order to imitate the mere *forms* of the style, which depend entirely on the subject which each writer has treated of, and which have the more merit, the more they are original. Those who have a particular predilection for an author, are disposed to espouse the forms of his periods, the turns of his expressions, and frequently the very

words he makes most often use of; you will avoid this danger by introducing a great variety in the choice of your readings.

In the same manner as every great writer has his own style, which originates from the peculiar turn of his mind, all those of the same age or of the same country, have a general coloring which belongs to the epoch at which they have been writing. Thus, every painter is distinguished by his own manner and that of the school in which he has been formed; and in the same manner, as in painting, some masters have opened a new road in which they have been followed by a great number of disciples; some men of genius in the field of literature have had a crowd of imitators. Commonly these founders of new schools have faults of their own; and it is principally these faults which we observe in those who come after them, because the original beauties cannot be imitated.

The ancient Greeks had in their style a majestic simplicity; this character distinguishes Herodotus, Thucydides and Xenophon. Plato having introduced into his prose the ornaments of poetry, and given to his periods as much harmony as possible, seduced so much the imagination of his readers, that he made them admire even what they did not understand.

Those who imitated his brilliant and figured style, however, being not, like himself, supported by grand ideas, lost themselves in vague abstractions. The Romans, formed upon the model of the Greeks, after having been long barbarians, adopted finally that imposing style which we admire in Titus Livius and in Cicero, though the latter is somewhat diffuse, and the former too periodical. Tacitus, by creating a contrary manner and employing a concise style and short periods, was not less sublime than his predecessors. Seneca had used the same forms, but while Tacitus includes in every one of his periods a full and entire thought to which he has no need to return, Seneca re-produces the same idea in hundred different ways. In the thirteenth century, Dante, an original and sublime genius, awakened the imagination of his countrymen.—Soon after, the renovated study of the ancients imparted a new turn to the human mind; the works of Aristotle communicated to some a dry and arid manner, while those of Plato made adopt to others a style at once abstract and metaphorical.

In France, Michel de Montagne opened a new road. His bold, lively and picturesque manner, is that of no other writer; it suited only his genius. Pascal gave at once to the French language the character which it has since preserved: it was then that the greatest writers, such as Bossuet and Fenelon, knew how to unite majesty with simplicity, the most dazzling eloquence with a rigorous dialectic, and purity of elocution with the boldest expression. Voltaire, who did not exercise himself in the oratorical kind, exhibited a continued elegance, an admirable clearness, and the happy talent of associating and opposing ideas which belongs only to himself. Buffon delineated nature with a pencil equally rich as herself. He made use of the most brilliant colors, but he knew how to vary them according to the nature of the subjects and to use all the shades necessary to compose the most harmonious pictures. Rousseau carried eloquence to the highest pitch, because he wrote under the impulse of the most intimate conviction, and that of his heart. Finally, in our days, the author of Anacharsis transported into the French language all the flowers of the Greek literature.—The writers of a secondary order in the age of Lewis XIV, became frosty when endeavoring to imitate Pascal; the imitators of Buffon, overcharged with foreign ornaments the descriptions which they gave of nature; those of Rousseau exhibited a factitious enthusiasm.

At present the most common fault is, to multiply figures, to affect a periodical harmony, which often becomes fatiguing, and entirely to forget simplicity. I have asked myself the cause of this dereliction of taste, and I have thought that could attribute it to the books which are made use of in literary education. In all the works of rhetoric, the most remarkable passages of Cicero, of Bossuet, &c. are quoted as models of style; but these brilliant passages acquire their real value only from the skilful manner in which they are placed. They are preceded and followed by some pages where every thing is simple; we are led to them through a gradation of ideas. In order to imitate these passages which excite their enthusiasm, young people are hunting after pompous expressions and are led astray from nature. This pretended warmth is nothing more than the labored off-

spring of the mind; you are dazzled and you see nothing. No doubt, there is yet among us good writers, but I give you a warning to beware from the general fault. I like much better the antique simplicity of the history of Joseph in the bible, than all those high-toned narratives, at the end of which, you scarcely know what the author meant to say. I think, that instead of exciting young people to employ the figured style, they ought to be exercised to write with the greatest simplicity, to make choice of the proper words, to dispose their ideas in the most convenient manner, to be clear and precise, and to say nothing useless. The traits of sensibility and of imagination will present themselves unsought, whenever the writer is perfectly penetrated with his subject. The various observations which have been published on the art of writing, are useful to direct us when we are correcting our compositions; they are of no avail to make us discover those beauties with which they ought to be ornamented.

When an interesting subject will have presented itself to your mind, when you will be well convinced that it is not above your powers, and that you may do some good by treating it; it is then that you will do well to meditate upon it and to consider it in all its various bearings; you will discuss the objections, and reflect upon the order in which your ideas ought to be disposed; all this is to be done before you begin to write.

From the moment, that you take up the pen, be attentive to give to your style clearness, precision, elegance and harmony; apply yourself with the same care to the execution of the details as you have taken in the formation of the general plan, endeavor to avoid the least negligences under the plea that you will make them disappear on a second revisal; there will be enough of them in spite of your best efforts. If, through laziness, a writer is negligent and diffuse in his first sketch, he will find an infinite trouble afterwards to suppress repetitions, and to substitute the proper word for the one which is improper. Let then your first cast be as correct as possible. Be not afraid least this attention should make you lose the thread of your ideas. After you have finished, lay your work for some time aside; meditate frequently the ideas which it contains, but take

up your manuscript and revise the details only after you have in some measure forgotten them. It is then that you have to judge with an extreme severity. Cut off what is useless, endeavor to condensate what is diffuse, change every expression that is deficient either in force or in clearness, try your periods, by reading them in a loud voice, that you may better judge their harmony; examine whether you could not impart to the whole a higher degree of simplicity, whether there are no ornaments foreign to the subject, whether your style is not too stiff, whether, supposing your reader cold and indifferent, you have known the art to captivate his attention gradually, to establish between him and yourself harmonious feelings, finally, to carry him along with you by taking hold at once of his reason, his heart and his imagination. Having done this, transcribe your work, that you may have occasion to correct its slightest faults. If you have a friend on whose taste you may rely, let him read your manuscript; listen to his advice, weigh it with respect to any thing that is connected with the ideas; follow it in every thing that concerns taste. When a work is once published, it is too late to be anxious about its destiny; but before this moment one cannot consult, revise and correct sufficiently.

Many modern writers pride themselves on account of their facility; this quality is without any doubt a proof of the talent of the author, but it is the bane of his production. Elegance, correctness, and truth to nature, are the fruit of labor. Under the influence of lively emotions, we may write with rapidity some eloquent pages; but if we abandon ourselves to our imagination in treating a subject which requires developments, our ideas will not be exactly defined, and our expression will be always vague. Never hurry yourself too much; what matters it that one more year be spent in the composition of a book destined to the instruction of posterity? The works of the ancients which have been preserved, those of the moderns which every day acquire more value, those which seem to be the most easy, have almost all cost much time to their authors. The ancients have spoken frequently of the pains which they took to obtain the suffrages of the public. Virgilius was correcting his Georgics during twenty years; Horace has left us only a small volume, but mark

what he says of his labor; Ariosto, who seems to have written under the immediate impulse of his genius, was incessantly correcting; Racine, after having formed the plan of a tragedy, spent two years in putting it into verse; Buffon, Rousseau composed and re-composed twenty times the same page, and Boileau says that the most easy verses that he ever wrote, had cost him much labor. If there are some exceptions to this, they are extremely rare.

LETTER OF THE MARQUISE DE CABRIS TO HER DAUGHTER, MADAME DE NAVAILLES.

[In the first No. of the Gleaner we promised to furnish our readers with some specimens of the original manuscript correspondence of the Marquise de Cabris. We begin to fulfil this engagement, by placing before them the first letter written by that lady to her daughter, when on her return to France from Leghorn, to which place she had emigrated with her whole family, during the storms of the Revolution. The object of her voyage was to obtain the restoration of herself and of her family to the privileges of French citizens.]

Lerici, Wednesday morning.*

My voyage begins under unfortunate auspices, my dear Paulina, let us hope that it will end better. I shall not tell you all that I suffered yesterday at sea. We were constantly inundated with water, in the most imminent danger, and your poor mother, more sick than you have ever been at see, was almost trampled upon, stunned with the litanies of the Genoese, the blasphemies of the Provençal sailors—six of whom a small craft had poured into our felucca in the midst of a storm.—Amidst so many evils, I still found succor and consolation. Mr. Antram, of Marseilles, captain of a merchant vessel, had declared himself on our departure the servant knight of the signora Antonia,

* Lerici is a small town on the eastern coast of the gulph of Genoa, at six miles from la Spezzia —The letter was written in 1796, and it is supposed in the month of April.——*Editor.*

which is the name under which I am travelling. He has filled very well the duties of his new office; the honest tar has lavished on me every little and delicate attention, and I declare to you, that if all French *citizens* resembled him, I should be tempted to be reconciled to these Republicans. We arrived at Lerici at 5 o'clock in the evening: I had myself put on shore directly, for I was too sick to spend the night in our open felucca. I found in the tavern a polite Englishman, who had come there with the felucca which started from Leghorn last Monday in the evening, and who waits, like myself, anxiously for the moment when it will please the winds and the master of the vessel to carry us to Genoa. We took our supper together. In the distribution of the rooms, I found myself in a dark hole which receives all its light only through a window which communicates with the apartment allotted to the Englishman. Of two beds placed in this horrible lodge, the one was a good bed for a master, and the other a very bad one for a servant. Upon my present exterior and especially upon that of my knight servant who eats and sleeps on board, the indifferent bed was prepared for me. I transferred, however, the sheets of the one to the other, I slept perfectly well, and thanks to my precaution of leaving the door open, I had sufficient air for breathing. I can assure you, that my boldness on this occasion did not expose me to the least insult, so much it is true, that confidence, a virtue which is said to belong especially to youth, may in certain cases, suit likewise old age. Upon my awaking, I think I called Paulina, all out of habit; at least I am certain to have looked round for my Edward and my Victor.* I received no answer from the lazy Paulina, and my two blackguards did not rush into my embraces. The moment, I must confess, was cruel for your mother. This day will be still more loathsome for me. To advance rapidly on a journey removes half of our affliction.—Nothing, however, remains from the dreadful state in which I was yesterday, but a violent head-ache and a lumbago. I think, after all, that the large quantity of bile which I vomited yesterday, will procure me a better health for the remainder of the voyage. We are threatened to be obliged to spend here the whole day,

* The two grandchildren of Madame de Cabris.——*Editor.*

and the whole ensuing night. I am enraged, for this is so much time lost without any profit. In the meanwhile I am cheering up my tedious hours by writing to you, my dear Paulina, but to tell you truth, I would like still better to be embroidering at your side, and even to scold you occasionally according to my laudable custom.

Apropos of scolding, I hope that my lieutenant* will already have acquitted himself of this part of his charge. He will have done very well to take his advance in this respect, as I will furnish you with weapons to parry his attacks. Ask him, I beseech you, what he has done with my certificate of health and how without it I could prove at Lerici that I was not carrying here the plague? When he has discovered this new blunder of his, he will, I am sure, have run mad and cursed against himself. For my part, as the accident has not been attended with any serious consequence, I laughed at it from all my heart. It would have produced on me a quite different effect, if, on setting out from the harbor of Leghorn, I had not left behind all my sensibility, to carry off with me nothing but my courage; I would have been greatly moved to think that our friend regretted me enough to have lost his head in our last adieu. From emotion I would have passed to regrets, to tears, to pathetic letters; all this would have been very beautiful, no doubt, and especially very useful. I preferred, nevertheless, to this old *regimen*, one that is at once more agreeable and more wholesome—that of gaiety. Had I been young and handsome, said I to myself, Gabriel would have soon ascertained my health by the warmth of my lips: but old and ugly as I am, he has preferred to keep the certificate of the board of health of Leghorn, and as in fact he takes some interest in my well-being, he has not been willing to part with this *extraneous* proof of the good state in which I was, when I left him. But scolding apart, I am perfectly convinced, that you will find in good Gabriel all the resources of a good heart, and of a character at once delicate, firm, obliging and active. Tell him a thousand polite and tender things from me and as-

* Gabriel de F——a common friend and relation under whose care Madame de Cabris had left her daughter.——*Editor.*

sure him that next to you and to my proper family, he is foremost in my memory.

According to all appearances, my poor husband,* will have had a very bad day yesterday.—He must have remained probably in bed. If he is tolerably well to-day he will take some exercise, and be well attended, I am sure of it, for you love him, and you love likewise your mother, when she does not scold, and these two sentiments united in his behalf at a moment when he has only you, and you only him, for your mutual support will render him still more dear to you. With respect to our boys, take great care of their stomachs, permit Gabriel to give them occasional corrections, do not caress them unnecessarily, and all will be well. Speak to them sometimes of *Nonna*,† but only to make them preserve the remembrance of me, without endeavoring to affect them on account of my absence, and presenting them the near prospect of my return with the arsenal which Victor has bespoken from me, and the confectioner's shop which is desired by his brother.

Did you see yesterday the *little woman?* Did you spend with her an easy if not an agreeable evening? I wished you could attach yourself more and more to this small circle, it suits you in every respect, and it can have for you no danger; your character and your situation forbid equally an absolute solitude. You will present my compliments to the husband and to the wife.—Tell Doctor Speroni that I repose myself with the most entire confidence on him for the health of all those whom I cherish, and that he is very happy to have got rid of me, for, certainly the magazine of bile, which I deposited yesterday at sea, would have cost him sooner or later much trouble on land. Exposed as he is incessantly to the motions of bile of handsome women, I know, that he is very capable of managing them to the best advantage, but probably he might not have

* The Marquis de Cabris was laboring under a long protracted and distressing disease. He had remained with his daughter at Leghorn ——*Editor.*

† *Nonna* in Italian signifies grandmother.——*Editor.*

been equally successful with regard to me, and I conclude that he is very happy not to have been put to the trial.

My compliments to faithful Paroti. Tell him that all the charm of his voice would not have been capable of curing me yesterday, but that if I could listen to him to-day, I think that it would be truly capable of exerting a very powerful effect upon me, and that the vacuity of mind, in which I find myself in this tiresome spot, would add still more to its intrinsic merit.

I hope, my dear Paulina, you will give me every day a faithful account of your health and of your occupations. Believe me, labor is necessary to your physical as well as to your moral well-being. You know, that this has been always my advice, dictated by experience. You will then, I dare say, take care of the one and the other, and if at any time you feel yourself discouraged, think of your mother, and of the pleasure she will feel in hearing that her Paulina follows her advice and derives from it real benefit.

Wednesday evening.

One more day is spent, the wind is contrary, and we cannot yet foresee the moment of our departure. I was obliged to dine on shore upon putrid fish, for, thanks to heaven, all my provisions have been spoiled by the sea-water, and my syrups are the only thing I have been capable of preserving from the general wreck. I consoled myself for this disappointment and all those which I am experiencing in this place by means of my universal remedy, viz. exercise. I come just now from making an excursion to the neighboring mountains with my honest Captain, and I found again the state of cultivation and many of the prospects of our own country. I saw nothing around me but forests of olive-trees, and of creeping fig-trees, high stone walls, steps of stone, hewn into the naked rock, precipices, wild trees, mountains cultivated to the very summit, finally, a green and pleasing turf. We were yet treading upon olives scattered on the ground, while the trees are already in full blossom; this certainly proves, that in point of labor and industry, the Genoese peasant is much inferior to the Provençal. But our astonishment ceases, when we consider, that here he breathes a very unwholesome air, that the territory of Lerici is not divided, as

in our country, into small lots, that the people, entirely addicted to the sea, prefer fishing and navigation to agriculture, and that the great proprietors are in want of hands to gather in the abundant produce of an extremely fertile soil. One might buy here a very extensive tract for a mere trifle, and a colony of Provençal laborers would convert this country into a kind of Paradise. If ever you pass here, my dear Paulina, without me, I recommend to you to make a walk in the vicinity; I wish you could partake of the enjoyments which this country has afforded me, and for once at least, I agree, that you were in the right, when you asserted, that the landscapes and the culture of Tuscany are not the most beautiful in the world, and that your own country deserves the preference. I am only afraid that you will change your opinion by changing the place of your residence, and that your imagination, too frequently in opposition with mine in matters of this kind, will make you regret the lost object in the midst of the enjoyments offered by the one after which you have longed. This is what we will see in proper time and place.

If, as every thing forebodes it, we do not yet set off tomorrow, I shall again take up my letter, my walk, my embroidery, and time will pass, though, indeed, sadly enough, so far from you, from mine and all those whom I cherish, and still so far from the object which has forced me to separate myself from you all. I find a great pleasure in writing to you, as my tattling will sufficiently prove. From here, and even from Genoa, I can write without disguise; in a few days, however, I will be obliged to change my style, to weigh my expressions, and to veil my ideas. Adieu then to half the pleasures that I am experiencing now. I will be, nevertheless, exact in my accounts, you can rely upon it.

I forgot to tell you of a gallantry of my captain, which you will take as a favorable augury for yourself. He has made to me the sacrifice of his cap, and the whole day he has appeared before me covered with his hat without a cockade. This sacrifice is the more beautiful, as it has been neither exacted nor desired.

For this day, I think you have got from me prating enough, my dear Paulina. I embrace your father, our two urchins, and you particularly. I am now to take rest with the more pleasure, as I believe, that without you sleep is a supreme good—*I mean at Lerici.*

Thursday morning.

We have the finest weather possible, and still we are not stirring, my dear Paulina, because the masters of our vessels have calculated that to-morrow was a holiday, and consequently that they could not disembark their cargo at Genoa, and, on this account, it would be better for them to spend one more day here with their families. Thus, we are only to set out to-morrow morning, provided the weather be favorable, and if not so, which is, indeed, very possible, there will be no term to our stay at Lerici, If, since my arrival in this place, any felucca had started, I would have taken passage in her, for I am extremely impatient to go on; unfortunately, all the masters of vessels are led by the same interests; no one is willing to leave this harbor, and all my eloquence has been lost in the vain attempt of changing their determination.

I did not spend the last night equally well as the preceding: I awoke, loaded with sadness, and my lumbago had became so painful, that every motion I made to rise, occasioned a violent perspiration. I am now better; I am drinking plentifully of lemonade, and I am in hopes that it will be with this indisposition as with so many others which I have experienced, I mean, that it will cease making war on me out of lassitude, finding me stronger than itself. And you, my friend, how do you govern your health in my absence? No remedies, I beseech you. Exercise, good diet, and baths, whenever you can procure them, are all that is wanting. In your situation it is quite sufficient to gain time and to prevent the progress of the evil. Can you induce yourself to rise early, to walk one hour before breakfast with your father and with your children, in order to prepare yourself for a well-employed day? I recommend to you the greatest care in admitting air freely into the room of your children during night, to make them bathe every day, finally, to

neglect nothing, that I may see you all again healthy and contented. I entrust all these interests, the only ones which are yet dear to my heart, first, to you, my good friend, and then to good Gabriel, to his sensibility, and to your justice; for certainly you owe some compensation, some consolations, to your tender mother. Remember, that from your letters only, from the account which you will give me of the situation of my family, I can derive the necessary courage and the power to labor for the welfare of you all and to prepare your future happiness. Remember, finally, my dear Paulina, that I am no more capable of enjoying and suffering, but in you and through you, and that it is only from my Paulina, that I expect the repose or the despair of my old age.

Thursday evening at 11 *o'clock.*

Finally, my dear Paulina, we are to weigh anchor at twelve o'clock, and I hope, that we will arrive to-morrow at Genoa. I rejoice infinitely in this prospect, for I was the whole day a prey to melancholy, in spite of my customary resource of walking, in which I have spent the greater part of the day. How much did I regret your absence! how much did I regret to be without my poor little boys in the midst of this beautiful scenery! Why are we not permitted to live here, united with the wrecks of our former fortune! Adieu, my good friend, I am continuing to remove still further from you, but it is for your good, therefore have patience. I embrace you, my dear, I embrace the whole family, and finally, all our friends.

MIRABEAU DE CABRIS.

MISCELLANIES.

MR. BRANDE, the ingenious successor of Sir Humphrey Davy at the Royal Institution, has read before the Royal Society a second paper on the state in which alcohol, or pure ardent spirit, exists in fermented liquors. It has been usually supposed, that alcohol was a product of the process of distillation, and the experiments of Mr. B have been instituted with a view to ascertain the correctness or incorrectness of this opinion. He had previously concluded that any new arrangement of the ultimate elements of wine, which could occasion the formation of alcohol, would constantly be attended with other marks of decomposition, and that carbon would be deposited, or carbonic acid evolved; neither of which circumstances does actually take place. He has succeeded in shewing, that alcohol may be separated from wine without the intervention of heat, and that the same proportion may be thus procured as that yielded by distillation. His plan is as follows. He first separates the coloring matter and the acid of the wine, by means of a concentrated solution of subacetate of lead, and then by subcarbonate of potash, he finally disengages from it the alcohol. He answers the assertion, that a mixture of alcohol and water, in the same proportion in which it exists in wine is much more intoxicating than the same quantity of wine itself, by proving that the union is incomplete; and he states also, that the acid and extractive matter blunt very much the real strength of the wine. Mr. B. therefore, again concludes, that the whole quantity of alcohol which is found after distillation, had actually been contained in the fermented liquor operated on.

Mr. Gay Lussac has now demonstrated, that there are only three different oxides of iron which are perfectly distinct from each other; and that the various colors which some of them assume, arise from their different states of aggregation. The first oxide, which is white, and which is obtained whenever iron decomposes water by means of an acid, the acid not furnishing the oxygen by being itself also decomposed, consists of 100 parts of iron, and 28 of oxygen. The second oxide, which is produced by burning iron in oxygen, or in atmospheric air,

at a very elevated temperature, or where water is decomposed by iron without the auxiliary presence of an acid, contains 38 per cent. of oxygen. This second oxide, when in a mass, is of a blackish grey color, and when precipitated, is of a deep brown, but when very minutely divided, it is green. It is also very magnetic. The third, the red oxide, is composed of 100 parts of iron and 42 parts of oxygen. In a natural state, the white oxide does not exist, except in combination with carbonic acid.

The celebrated hypothesis of Sir Humphrey Davy, which asserts that muriatic acid is a compound of chlorine and hydrogen, and not a compound, as has hitherto been supposed, of oxygen and some unknown base, is still unsanctioned by the opinions of many of our first chemists. Among these, Professor Berzelius, of Stockholm, says, although it is difficult, experimentally, to demonstrate the incorrectness of Sir Humphrey's hypothesis, yet, according to the very luminous doctrine of definite proportions, which was first given to the chemical world some years ago by the celebrated Mr. Dalton of Manchester, and of the truth of which Sir Humphrey himself, with every other scientific chemist, entertains no doubt, there are many combinations of muriatic acid, which, if explained according to Davy's hypothesis, are quite inconsistent with well ascertained chemical proportions. At any rate, he at least thinks, that all the facts at present known concerning muriatic acid and its combinations, may be equally well explained upon our old opinions.

The second volume of the second series of the Memoirs of the Philosophical and Literary Society of Manchester, contains several articles highly interesting to physical science. Among others, we find in it *an account of some experiments to ascertain whether the force of steam be in proportion to the generating heat, by John Sharpe, esq.* Mr. Sharpe's experiments have ascertained two things: 1, that water heats equally, or in the same time [supposing the heating cause the same] from 120 deg. up to the highest temperature that it can reach without boiling [and that temperature depends upon the pressure]. Suppose, for example, that it is heated 10 deg. or from 120 to 130 deg. in three minutes; it will be heated from

270 to 280 deg. in the same time. This is a very curious fact, and not easily explained, unless the thermometer is an inaccurate measurer of heat. 2, That six ounces of steam of 212 deg. condensated into water, give out as much heat as six ounces of steam at the temperature of 275 deg. but the second six ounces come over in a much shorter period than the first. Therefore, the density of steam at 212 deg. is 150 times greater than at 32 deg.; and its density at 252 deg. is twice as great as at 212 deg. Hence, we have the specific gravity of steam at different temperatures as follows:

	Sp. Grav.
At 32 deg.	0. 0045.
— 212	0. 6896.
— 252	1. 3792.
— 307	2. 7584.

This explains the elasticity of steam in a satisfactory manner, and brings it under the same law as common air, and all the other elastic fluids.

AURORA BOREALIS,

Observed at Pittsburgh.

On the 17th April, in the evening, at three quarters past 7 o'clock, our attention was attracted by a luminous appearance in the northern region of the sky: The air was entirely clear, a north-west wind was blowing briskly, and the thermometer stood at 34° F. The phenomenon exhibited the bow of a circle, extending along the horizon. The atmosphere behind the luminous circle appeared dark and hazy, yet stars could be perceived through it with sufficient distinctness. From time to time, and especially in the beginning of the appearance, streams of white light were shooting out from the luminous circle.—The size of the meteor was alternately increasing and diminishing, and varying in the degree of light, which had all the apperances of an aurora borealis, except that, in no instance it assumed a yellow or reddish color, but presented invariably the appearance of white light. After the phenomenon had lasted nearly one hour, the luminous semi-circle became

more and more contracted, and at this time, an outer circle was formed, at some distance from the former, as by reflection, until the whole disappeared entirely.

A NEW MODE OF MAKING COFFEE, DEVISED BY COUNT RUMFORD.

THE celebrated Count Rumford, than whom, perhaps, no gentleman has more usefully applied his scientific knowledge to the practical improvement of the various luxuries and comforts of our tables and habitations, has lately given us an essay on a new mode of making coffee, whereby we may prevent the dissipation of that essential aromatic oil, on which, every one must have observed, that the exquisite flavor of this enlivening beverage altogether depends. But in order to attain effectually this desirable object, he says, that every family should themselves roast the coffee which they have occasion to consume, on account of the necessity of paying a greater attention to the management of this process than can be possibly bestowed on it when performed in the large way, in which it would necessarily be conducted by the public merchants. Coffee-beans may be conveniently roasted in a clean Florence flask, or any other similarly formed vessel, held by its neck over a clearly burning fire, until they assume a dark brown color, and begin to exhale their peculiar fragrance, when they should be immediately removed; and, when cold, finely ground and put into an accurately close canister or bottle. The mouth of the flask, during the operation, is to be slightly stopped with a loose cork, and its contents, which never should at one time exceed half a pound, must be continually agitated, lest the completion of the process should take place sooner in one part than in another. It is evident, however, that attention must be also given to the manner of imparting the fine flavor of the coffee to its menstruum, the water, in as unimpaired a state as is possible; and, for this purpose, the count has recommended an improved vessel, for a particular description and delineation of the form of which, we beg leave to refer our readers to his essay itself. It is very similar to the double vessel now commonly employed, excepting, that it is so made as to be surrounded on all sides by

boiling water or steam, contained in a third external vessel. By this ingenious contrivance, the escape of the volatile principle of the coffee is again effectually cut off; for, by thus enveloping the inner vessels in a medium of heat throughout, we completely prevent that intestine motion in the mixture of the water with the coffee which would otherwise ensue, from the ascension of its hotter particles, and the consequent falling down of those more cold, if the surface of this mixture were exposed to a medium of an inferior temperature to itself. The Count has calculated that one pound of good Mocha coffee-beans, which, when properly roasted and ground, weigh only 14 ounces, will make, in this way, 14 pints, which will fill 56 large coffee-cups with the very best coffee that need be made.

Lon. Mon. Mag. Feb. 1813.

[Edinburgh Medical and Surgical Journal, Jan. 1813.]

QUESTIONS ANSWERED ON THE AVERAGE NUTRIMENT OF DIFFERENT PROVISSIONS.

1. A POUND of wheaten bread is equal to half a pound of beef, mutton, veal. Pork is more nutritive than either of the three last.

2. One pound of meat is fully equal to two pounds of bread.

3. Two pounds of fresh milk are not equal to one pound of bread.

4. Good cheese is equal to butcher's-meat, weight for weight.

5. Good butter is not twice as nutritive as meat.

6. One pound of good ale is not equal to half a pound of bread.

7. Wheat is twice as nutritive in bread as barley is.

8. One pound of wheaten bread is equal to one pound and an half of oaten bread.

9. Pease or bean meal is only half as nutritive as wheat, if made into bread: pease or bean meal, if made into soup is more nutritious than if made into bread.

10. Three and an half pounds of potatoes are equal to one pound of wheaten bread.

ANECDOTES.

An English banker of the name of Sair was accused of having formed a conspiracy in order to carry off George III, and to transport him to Philadelphia. Being brought into the presence of his judges, and interrogated: "I know very well," said he, "what a king can do with a banker, but I am ignorant what a banker can do with a king."

—

The Regent, under the minority of Lewis XV, wished to go to a ball without being recognised. "I know how to do, to answer your wishes," said his favorite, the abbé Dubois, and during the ball he kicked him severely. The Regent, smarting with the pain, whispered to his minion: "Abbé, you disguise me rather too much."

—

It is known, how much familiarity Frederick II, of Prussia, allowed to some of those who lived with him on a friendly footing. No one took more advantage of this condescension than the general, Quintus Icilius. The king of Prussia told him, before the battle of Rossbach, that if he should lose it, he would go to Venice and live there by practising medicine. Quintus contented himself with replying: "*Always an assassin!*"

—

A peasant divided his little fortune between his four sons, and lived alternately with the one and with the other. On his return from one of his travels, he was asked, "Well, how have they received you? how have they treated you?"—"They have treated me" said he "like their child." This expression appears sublime in the mouth of such a father.

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A lady of 90 years of age, said to Mr. de Fontenelle, who was of 95: "It seems that death has forgotten us altogether." "Hush!" answered Fontenelle, putting his finger on his lips.

—

Fontenelle had written an opera, in which there was a chorus of Priests, which afforded much scandal to the devout. The archbishop of Paris threatened to have it suppressed. "Why" said Fontenelle, "I do not interfere with his clergy, I wished him to leave mine alone."

The bishop of Brieux, pronouncing the funeral oration of Maria Theresia of Austria, extricated himself in a very simple manner, with regard to the partition of Poland: "France" said he, "having said nothing of this partition, I shall do as France has done, and say nothing about it."

—

One day, when a dispute took place at the French academy to such a degree, as to drown every voice, Mr. de Mairan, one of its members, said: "Gentlemen, how would it be, if we did speak only four at once."

—

A contribution was gathered one day at the French academy for some benevolent purposes. Some few livres were missing in the account of the collected money, and one of the members, who was very much noted for his avarice, was suspected of not having contributed. He asserted, however, the contrary. The collector said, "I have not seen it, but I believe it." "For my part" said Fontenelle, "I have seen it, but I do not believe it."

—

Count de Mirabeau, who was of an extremely disagreeable figure, but replete with wit, was accused of the crime of seduction, and pleaded his own cause. "Gentlemen" said he, "I am accused of seduction; instead of any other answer or defence, I ask only, that my portrait be deposited in the register of the court." The clerk did not understand what Mirabeau meant. "Fool" said the judge, "look only to the face of the gentleman."

—

L'Ecluse, a director of one of the smaller theatres of Paris, related, that being young and without any fortune, he arrived at Luneville, where he obtained the place of Dentist to Stanislaus, the ex-king of Poland, the very same day, when this prince had lost his last tooth.

—

Beaumarchais, who had permitted himself to be insulted by the duke de Chaulnes, without avenging the injury, received a challenge from M. de la Blache. "I have refused better," was his answer.

THOUGHTS AND MAXIMS.

MEDITATION has bounds, sensibility has not. Thus are there limits to all those splendid endowments, those brilliant faculties, that flatter our pride. But to the soul there are none. She can spring into infinity; unite with the inhabitants of heaven, and repose in the bosom even of the Deity.

Madame de Genlis.

The storms of life, however brave the struggle made against them, never fail to leave melancholy marks of their violence. The traces of the mischief caused by the passions, are deep and indelible. *the same.*

The most brilliant successes of wit and genius find opponents; not so, noble actions, which are admired by all classes of men, who are equally able to feel and to appreciate them.

the same.

Reality of enjoyment without imagination is the most insipid thing in the world. *Lefevre.*

It requires sometimes a great deal of courage to dare following all our reason and all our heart without being importuned by the contemptible outcries of fools and knaves.

Clerdon.

The character of a man is not in his mind, but in his heart.

the same.

It is seldom sufficiently understood, how much man can perform, by the most stedfast adherence to the plan of conduct which his reason and his heart have traced to him. This firmness of the will supplies often the want of genius, and without it, genius itself is impotent. *the same.*

Enthusiasm, when founded on mere illusion, evaporates after a short while; that which we feel for what is truly beautiful noble and generous, is eternal, and every day gives it new strength. *the same.*

There are cases, when we ought to be equally above the offences of enemies whom we despise, and above those of friends whom we cherish. *the same.*

The multitude led by folly and prejudices, and incapable of raising their ideas to the height of those of the man of worth, take him down to their own level, and judge his actions by their own meanness. *the same.*

There are people, for whom calumny is as necessary as the air which they breathe; they seem to live and to batten only at the expense of the reputation of others. *the same.*

Filial piety, which survives the age of adolescency, is perhaps one of the most affecting qualities in human nature. It vouches frequently for the virtues of a whole life.

the same.

Public opinion is a tribunal which is not to be despised altogether; but which ought never to be respected implicitely.

Chamfort.

It is the wish of nature, that illusions should be the lot of the wise as well as that of fools, that the former might not be too unhappy through their own wisdom. *the same.*

Philosophy, like medicine, has many drugs, very few good remedies, and almost no specific. *the same.*

We see sometimes follies very well habited, as we see fools very well dressed. *the same.*

Our reason renders us sometimes as unfortunate as our passions; and we may say of him who finds himself in this case, that he is a patient poisoned by his physician. *the same.*

Weak people form the light troops of the army of the wicked. They do sometimes more injury than the army itself; they invade and they ravage. *the same.*

Address bears the same relation to cunning, as dexterity does to filching. *the same.*

ORIGINAL POETRY.

For the Western Gleaner.

Song, Tune, Maid of Lodi.

I LOVE the vernal morning,
The rosy hour of dawn,
When flow'rs the field adorning
Perfume the dewy lawn.

I love the carol cheerly,
That sings from every tree,
And yet I love more dearly
Her who's a friend to me.

Allur'd by nature only
I love the silent walk,
And yet I am not lonely,
For nature seems to talk:

Though vernal beauties merely
Such happiness can lend,
I love them still more dearly,
When with her who's my friend.

EDWARD.

THE LOVER'S ADDRESS.

HAVE you on the lap of May,
Mark'd the little violet blue,
Ope to catch the vernal ray?
Innocent it is, like you.

Have you seen the lily white
Spotless, as in Eden grow,
Spreading to the morning light?
Lovely emblem 'tis of you.

Have you mark'd the blushing rose
Gemm'd with summer's pearly dew,
When in early June it blows?
This, my dear, resembles you.

Yes, in your ebbing, flowing cheek
The lily and the rose I see,
Your eyes are like the violet meek;
But in your mind I read all three.

EDWARD.

SELECTED POETRY.

From the Polyanthos.

Additional verses to a favorite Song.

SPRING returns, the flowrets blow,
Will Hope return? Ah no! ah no!
With the dreams of youth she flies,
And like the rose, her emblem dies;
Fancy droops beneath the shade,
And all the gay delights are fled.

With radiant Summer's genial glare,
Will Hope return? Ah no! Ah no!
The flower that drank morn's dewy ray
Fades in the fervid blaze of day,
And all its fragrance, all its bloom,
Are lost ere night, in endless gloom.

When Autumn's ripen'd vineyards flow,
Will Hope return? Ah no! ah no!
The sparkling cup we thirst to sip,
Misfortune dashes from the lip,
And joys we fondly thought our own,
Are from our lips forever flown.

With Winter's stern and icy brow,
Will Hope return? Ah no! ah no!
Yet tho' his scenes are chill and drear,
They shew our real blessings near,
And Hope, on steady wings has fled,
To worlds beyond death's gloomy shade.

H.

TO SLEEP.

O Sleep! if in thy shadowy gloom
Oblivion's awful genius dwell;
Then Sleep, thy gifted wand assume,
And lead me to thy peaceful cell.

But there should Memory's pow'r prevail,
In vain on thee would Sorrow call
Thine opiate dews, thy charms would fail,
And fear the breast of Grief appal.

To save the soul from vision's woe,
To snatch her from thy terrors, Sleep!
Pity would all thy spells forego,
And bid the mourner "wake to weep."

LIFE OF A FOOL.

A fool enjoys the sweets of life,
Unwounded by its cares;
His passions never are at strife;
He hopes not, he not fears.

If Fortune smile, as smile she will,
Upon her booby brood,
The fool anticipates no ill,
But reaps the present good.

Or should, through love of change, her wheels
Her favorite bantling cross,
The happy fool no anguish feels,
He weighs nor gain nor loss.

When knaves o'erreach, and friends betray,
Whilst men of sense run mad,
Fools, careless, whistle on and say
"'Tis silly to be mad!"

Secure from sorrow, fear and shame,
A fool thus fate defies,
The greatest folly I can name,
Is to be overwise.

TO THE MOON.

From the Port-Folio.

SLOW o'er the bosom of the eastern glade,
Slow o'er the clouds that lately veil'd her rays,
The still full moon walks forth to light the shade,
And scatter o'er the hills her cloud-emerging blaze.

Dark in the east, where late she viewless rose,
Rests the deep gloom that marr'd her earliest beam;
While Hope soft whispers to my heart, thy woes
Shall like these clouds, ere long be ting'd with pleasure's gleam.

But from the rayless bosom of the north,
Where dark Æolus prison'd his bleak store,
A cloud of sabler hue comes rolling forth,
And settles on the face of Cynthia once more.

Black are the hills that meet no more her light,
Dark wave the forests in the breezes hoarse;
While she, unmindful of the nether night,
Beneath her sable curtain winds her wisely-ordered course.

Thus is it with the heaven-aspiring soul,
Decreed to dwell on earth, but pois'd on high,
O'er her bright surface clouds of sorrow roll,
But cannot change her course, nor bid her glory die.

Not by the passing clouds of life dismayed,
Nor from her venerated centre driven;
She sheds new lustre o'er affliction's shade,
And gives a never-fading beam of light to heaven.

VINVELA.